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The Pennsylvania State University

Title: Multi-messenger signatures from extreme astrophysical phenomena: tidal disruption events and BNS mergers

Abstract: In the current era of multi-messenger astronomy, gravitational wave (GW), neutrino, photon, and cosmic ray observations are combined to extract information about astrophysical sources and phenomena in the Universe. In this talk I will discuss some aspects of multi-messenger observations associated with tidal disruption events (TDEs) and binary neutron star (BNS) mergers. In particular, recent radio observations and coincident neutrino detections suggest that some tidal disruption events (TDEs) exhibit late-time activities, relative to the optical emission peak. A possibility for the late time activity could be delayed jets. I will discuss the multi-messenger implications of delayed choked jets in TDEs. I will also discuss the possibility of performing stacked triggered searches of high-energy neutrinos from BNS mergers using the next generation GW detectors at IceCube-Gen2.